

SIEMENS

SIREMOBIL

SP

Installation Instructions

Replacement of the C-arm rollers

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Documents required

With existing SIREMOBIL 2000:

- SIREMOBIL 2000 system manual
- SIREMOBIL 2000 Service Instructions, print number RR2-120.061.02 (Ser. No. > 10000)
or
SIREMOBIL 2000 Service Instructions, print number RR2-120.061.01 (Ser. No. < 10000).
- Logbook (in the monitor cart of the product).

With existing SIREMOBIL Compact:

- SIREMOBIL Compact system manual.
- SIREMOBIL Compact Service Instructions, print number SPR2-130.034.01 (Ser. No. > 2000)
or
SIREMOBIL Compact Service Instructions, print number RXR2-130.034.01 (Ser. No. < 2000).
- Logbook incl. IQ quick test (in the monitor cart of the product).

Parts required

Set of rollers	37 80 108 G5429
containing:	
16 pcs. rollers	70 59 595
32 pcs. shim washers	33 84 351

NOTE

It is recommended that when the 16 rollers are replaced, the two lateral guide rollers are also replaced. The rollers are not contained in the set of rollers and must be ordered separately.

**The following is required in addition for this:
4 pcs rollers 70 59 132.**

Validity of these instructions

- These instructions apply for the replacement of the C-arm rollers on the products
 - SIREMOBIL 2000.
 - SIREMOBIL Compact.
 - SIREMOBIL Compact L.

Safety information

- Please observe the product-specific safety information in the service instructions of the relevant product and the general safety information of the ARTD, Part 2.

⚠ DANGER

Risk of injury! Non-compliance can lead to severe injuries and even death.

Please note the following with SIREMOBIL 2000: When components or parts are removed from the counterbalanced C-arm system, for example the SIREPHOS or image intensifier, the vertical lifting column will move by itself all the way up to the stop, highly accelerated, with the force of the removed weight! The vertical lifting column must be locked before components or parts of the C-arm system are removed. It must not be possible to move the vertical lifting column upwards in the locked condition.

Description of locking the vertical lifting column of the SIREMOBIL 2000

- Set the lifting column to the required working height.
- Loosen the screw (Fig. 1/1).
- Push the lever (arrow / Fig. 1) down until it can be hooked into the locking member.
- Then tighten the screw (Fig. 1/1) again.
- Hook the lever (arrow / Fig. 1) into the locking member.
- The vertical lifting column must not be moved upwards in the locked condition.

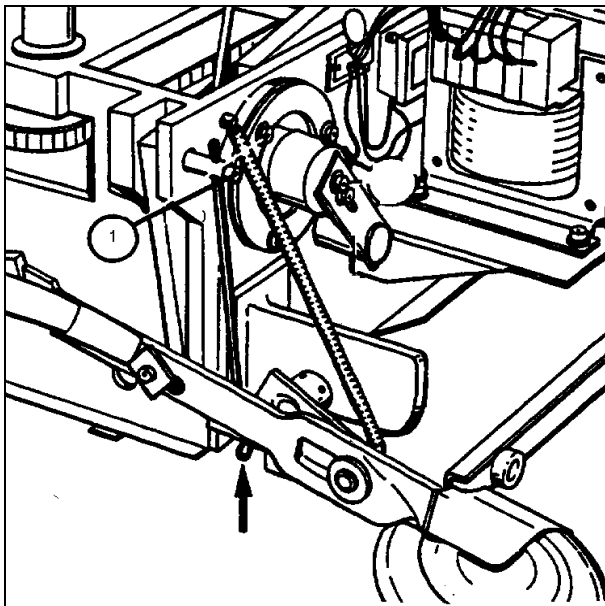


Fig. 1

⚠ CAUTION

Risk of injury! Non-compliance can lead to light to medium injuries and material damage. With SIREMOBIL 2000, SIREMOBIL Compact and SIREMOBIL Compact L please observe the following: When components or parts are removed from the C-arm system, the orbital brake and the angulation brake must be applied to ensure that any unintentional C-arm angulation and orbital movement is avoided. Apply the orbital brake and angulation brake before removing parts.

⚠ CAUTION

Risk of crushing! Non-compliance can lead to light to medium injuries. With SIREMOBIL 2000, SIREMOBIL Compact and SIREMOBIL Compact L please observe the following: As soon as the image intensifier and SIREPHOS are removed from the C-arm, the basic unit tilts backwards and the front arm goes up. To avoid this, before removing components or parts of the C-arm, secure the basic unit against tilting backwards by means of a suitable support (e.g. wooden block of suitable height).

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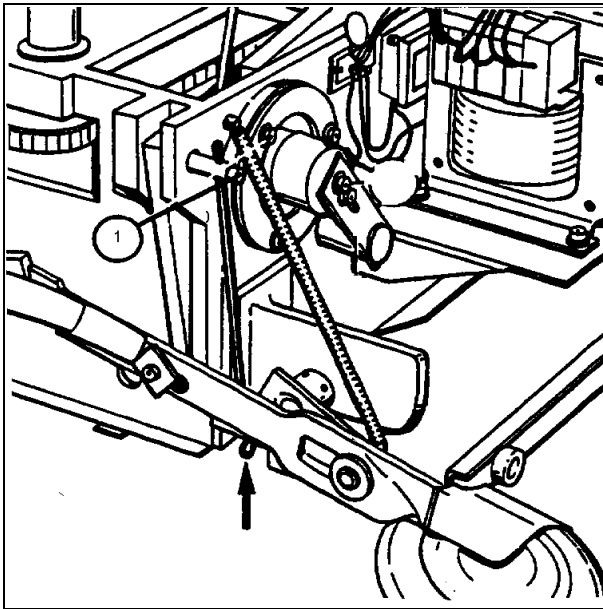


Fig. 1

Setting the C-arm and lifting column to the working position

⚠ WARNING

Risk of injury due to electric shock! Non-compliance can lead to severe injuries and even death! Before opening covers disconnect the unit from the power supply. Pull the power plug out of the socket for this purpose.

⚠ DANGER

Risk of injury due to the vertical lifting column shooting out! Non-compliance can lead to severe injuries and even death. The movement of the vertical lifting column must be blocked before parts of the C-arm are removed! See Fig. 1

- Remove the rear cover of the basic unit.
- Remove the cover shells of the C-arm support.
- Remove the orbital rubber buffers (C-arm end stops) on both the SIREPHOS and on the image intensifier side. Behind the rubber buffers the bolts with the retaining screws of the SIREPHOS or the image intensifier are visible.
- Move the vertical lifting column into its highest position.
- Block the vertical lifting column. For this purpose loosen the screw (Fig. 1/1), pull the lever (arrow / Fig. 1) down until it can be hooked into the locking member. Then tighten the screw (Fig. 1/1) again. Hook the lever into the member. Check that the upward movement of the vertical lifting column is blocked.

NOTE

If the inner rollers of the C-arm are replaced, the SIREPHOS and the image intensifier must be removed. 2 persons are required for this and further work.

Number of persons required

- 2 persons are recommended.
- At least 2 persons are required temporarily for some of the work to be performed.

Auxiliary devices required

- 1 stable bench for setting down the C-arm. The C-arm including image intensifier and SIREPHOS weighs approx. 100 kg and must be securely supported by the bench. The surface should be large enough so that the image intensifier and the SIREPHOS can sit on the bench at the same time. Since during the replacement of the inner rollers the C-arm must be moved orbitally from end stop to end stop, a bench with 4 castors is favorable.

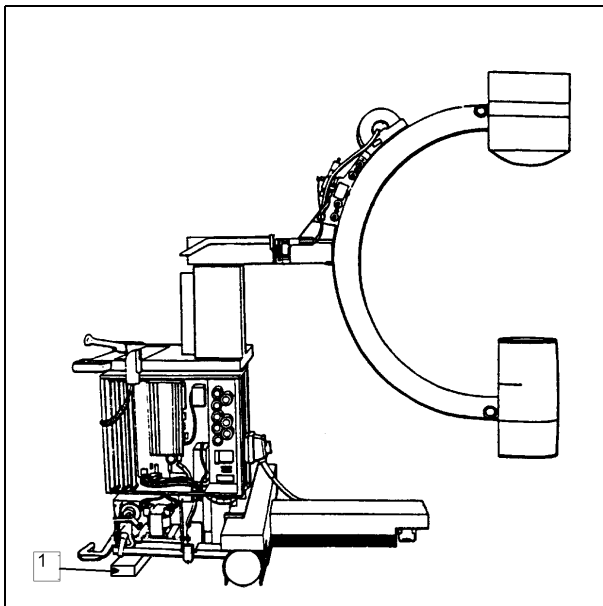
Securing the basic unit against tilting

Fig. 2

⚠ CAUTION

Risk of crushing! As soon as the image intensifier and SIREPHOS are removed from the C-arm, the basic unit tilts slightly to the rear.

- Place a wooden board or another stable object centrally under the basic unit. (Fig. 2).

Removing the image intensifier

⚠ WARNING

Danger of electric shock! Non-compliance can lead to severe injuries and even death. Before the electrode connections of the image intensifier are disconnected (anode / E3 / E2 / E1 / cathode and Penning) the SIREMOBIL must be switched off for at least 2 minutes. When pulling off the cables, discharge the residual charge by connecting the electrode connections to ground.

- Turn the C-arm so that the SIREPHOS stands in the stop of the C-arm.
- Unscrew the image intensifier cover.
- Move the C-arm into the 90 degrees or -90 degrees position; the C-arm is horizontal.
- Position the C-arm over a bench with sufficient stability. The surface of the bench should be large enough so that when setting down the C-arm both the SIREPHOS and the image intensifier sit on the bench.
- Press the lifting column down until the image intensifier and SIREPHOS sit lightly on the bench.
- Disconnect all connection cables coming from the C-arm to the VIDEOMED D, TV iris diaphragm, camera rotation, image intensifier mini-voltage supply and protective ground wire connections.
- Remove the image intensifier. To do this one person holds the image intensifier firmly. The 2nd person loosens the two mounting screws of the image intensifier and threads all cables out from the cable duct of the image intensifier.

NOTICE

Danger of destroying the camera system by direct sunlight. Remove the image intensifier from the bench and set it down on a suitable base. Do not place the image intensifier in direct sunlight or bright light!

Removing the SIREPHOS

- The C-arm and SIREPHOS are already placed on the bench.
- Unscrew the SIREPHOS cover.
- Unscrew all connection cables of the SIREPHOS, of the tube assembly collimator and protective ground wire coming from the C-arm.
- One person holds the SIREPHOS, the second person loosens the mounting screws of the SIREPHOS.
- Remove the SIREPHOS from the bench and set it down on a suitable base.

Unhooking the guide rope of the cable drum

- The guide rope of the ribbon cable drum is visible on the image intensifier side of the C-arm.
- Using adhesive tape, attach the guide rope to the C-arm over a large area before unhooking. This prevents the cable from coming off the cable drum.
- Using adhesive tape, also attach the ribbon cable to the C-arm over a large area .
- Loosen the screws (Fig. 3/1) of the rope guide.
- Unhook the guide rope at the spring.
- Also unhook the spring (Fig. 3/ 2) and secure it against getting lost.

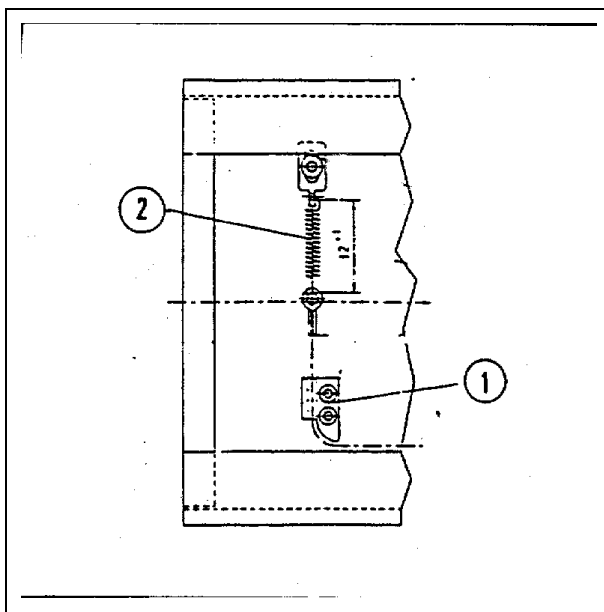


Fig. 3

Replacing the first half of the rollers on the SIREPHOS side

NOTE

Since the ribbon cable severely restricts the C-arm movement, the C-arm cannot be removed completely from the C-arm support and the 16 rollers cannot all be replaced at once. First replace the first 8 rollers (on the SIREPHOS side) plus 2 lateral guide rollers, then the 8 rollers on the image intensifier side and the lateral guide rollers.

NOTE

When moving the C-arm in the orbital direction always watch out for the ribbon cable and the guide rope. Keep the ribbon cable and the guide rope taut during orbital movement of the C-arm.

- The ribbon cable is fastened on the SIREPHOS side by means of 3 clamping screws .
- Loosen the 3 clamping screws; the holder of the ribbon cable is loose.
- The C-arm can be moved out from the first half of the rollers.
- Replace the two rollers for the lateral guidance of the C-arm by new rollers.
- Replace the 4 inner and 4 outer rollers.
- To do this, remove the locking ring on each roller.
- Remove the old roller.

NOTE

The new version of the rollers is somewhat narrower than the older version. Use 2 shim washers in addition in each case.

- Fit a shim washer, a roller and another shim washer on the relevant shaft.
- Refit the locking ring.
- Replace the other rollers in the same way.
- The distance between the inner and outer rollers can be adjusted. The distances of the outer roller pairs (Fig. 4/ 2) can be varied using the eccentric (Fig. 4/1).

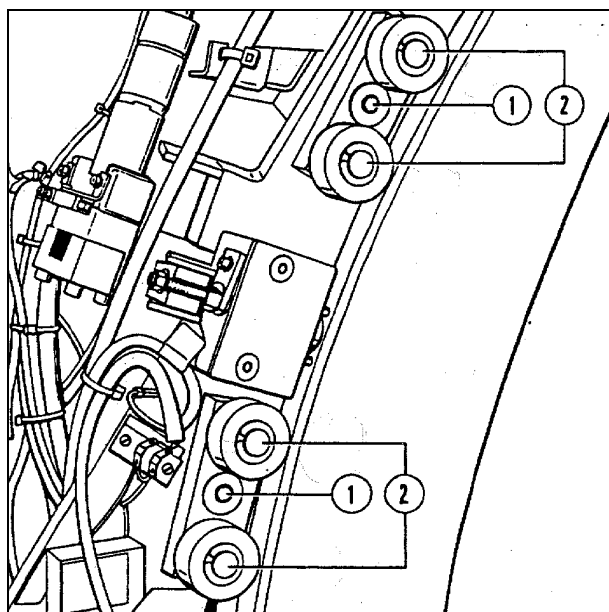


Fig. 4

- The eccentric is secured mechanically against turning by an Allen screw.
- Before threading the C-arm between the roller pairs, loosen the Allen screws of the eccentric bolts to increase the distance between the inner and outer roller pairs. Then thread the C-arm between the inner and outer roller pairs.
- Carefully move the C-arm orbitally to and fro by approx. 15 degrees without turning the C-arm out of the support. Set the eccentric again while doing this.
- The C-arm should have only a little play between the roller pairs, all rollers should contact the C-arm without high pressure.
- Then tighten the Allen screws of the eccentric bolts again.

Replacing the second half of the rollers on the image intensifier side

NOTE

When moving the C-arm in the orbital direction always watch out for the ribbon cable and the guide rope. Keep the ribbon cable and the guide rope taut during orbital movement of the C-arm.

- Move the C-arm orbitally into the other end position. Keep the ribbon cable and the guide rope taut while doing so.
- On the image intensifier side turn the C-arm orbitally out of the second 8 rollers.
- Replace the two rollers for the lateral guidance of the C-arm by new rollers.
- Replace the 4 inner and 4 outer rollers.
- To do this, remove the locking ring on each roller.
- Remove the old roller.

NOTE

The new version of the rollers is somewhat narrower than the older version. Use 2 shim washers in addition in each case.

- Fit a shim washer, a roller and another shim washer on the relevant shaft.
- Refit the locking ring.
- Replace the other rollers in the same way.

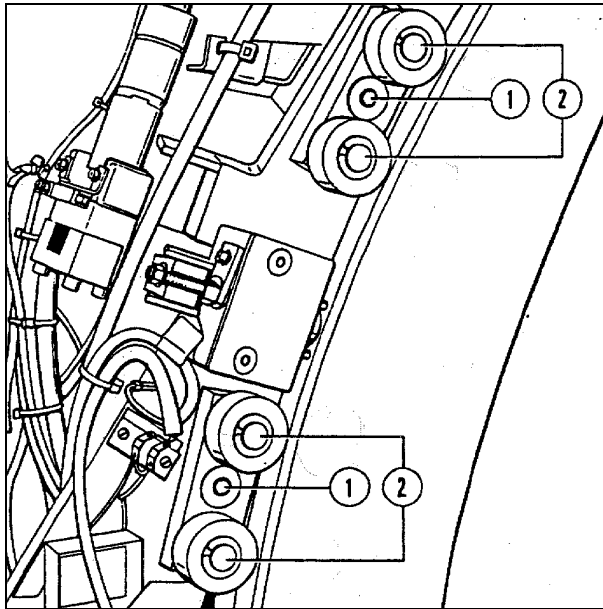


Fig. 5

- The distance between the inner and outer rollers can be adjusted. The distances of the outer roller pairs (Fig. 5/ 2) can be varied using the eccentric (Fig. 5/1).
- The eccentric is secured mechanically against turning by an Allen screw.
- Before threading the C-arm between the roller pairs, loosen the Allen screws of the eccentric bolts to increase the distance between the inner and outer roller pairs.
- Then thread the C-arm between the inner and outer roller pairs.
- Carefully move the C-arm orbitally to and fro by approx. 15 degrees without turning the C-arm out of the support. Set the eccentric again while doing this.
- The C-arm should have only a little play between the roller pairs, all rollers should contact the C-arm without high pressure.
- Then tighten the Allen screws of the eccentric bolts again.

Fastening the ribbon cable

- Turn the C-arm orbitally into the 0 degree position.
- Place the ribbon cable back in the clamp (on the SIREPHOS side) and clamp it tight. Keep the ribbon cable taut while doing this. The ribbon cable should be clamped again at the same position.

Fastening the guide rope

- Hook the guide rope back in at the spring.
- Hook the spring (Fig. 6/2) back on the holder (Fig. 6/3).
- Then fasten the rope guide (Fig. 6/1) again. In doing so, place the guide rope in the rope guide.
- Loosen the screw (Fig. 6/3), but do not screw it out.
- Move the C-arm orbitally a few times from end stop to end stop.
- In doing so, the spring should extend by a maximum of 32 mm. There is an elongated hole in the holder for adjusting the spring stroke.
- Tighten the screw of the holder again.

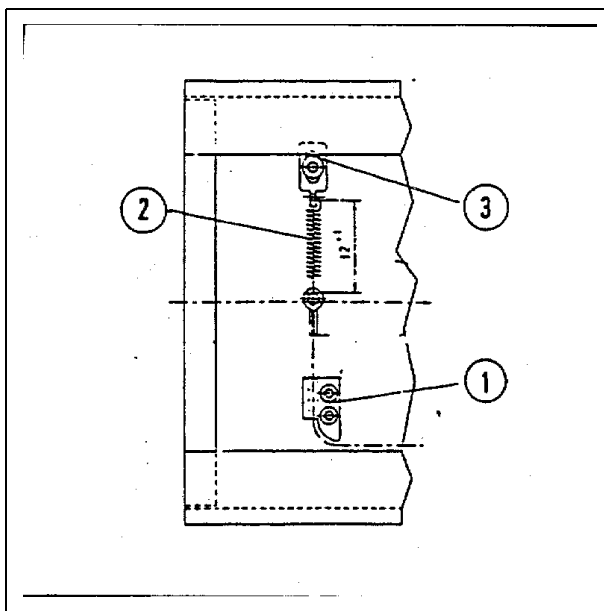


Fig. 6

Installing the SIREPHOS

- Fasten the protective ground wire back to the SIREPHOS.
- Mount the SIREPHOS back on the C-arm using Allen screws. Take care that the cables are not crushed.
- Restore all cable connections to the SIREPHOS, collimator and possibly available laser targeting device and Diamantor ionization chamber.

Installing the image intensifier

- Thread all connection cables again through the cable duct of the image intensifier.
- Restore all connection cables to the image intensifier, VIDEOMED D, TV iris diaphragm and motor rotation. Restore the protective ground wire connection to the image intensifier.
- Remove the bench under the C-arm.
- Remove the wooden block.

Unlocking the vertical lifting column movement

- Once the image intensifier and SIREPHOS are installed again, release the movement of the vertical lifting column.
- Unhook the lever (arrow / Fig. 7) from the locking member.
- Loosen the screw (Fig. 7/1).
- Move the lever approx. 3 centimeters upwards and tighten the screw (Fig. 7/1) again.
- It must be made certain that the locking lever can no longer be hooked into the locking member (e.g. unintentionally, due to vibration on moving the basic unit).

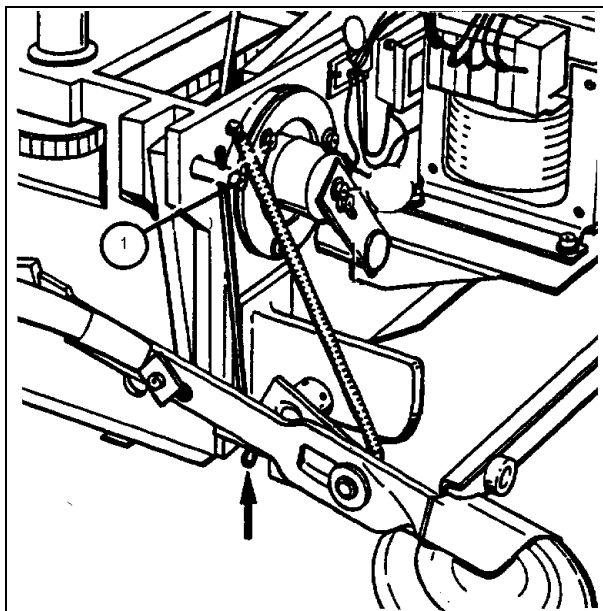


Fig. 7

Readjusting the eccentrics

- Loosen the 4 Allen screws of the eccentrics (Fig. 5/1) again.
- Move the C-arm orbitally several times from end stop to end stop.
- While doing so, adjust the eccentrics so that all rollers contact the C-arm in all C-arm positions without exerting high pressure on the C-arm.
If the pressure exerted on the C-arm by the rollers is too high, then the required movement force is increased.
- At the same time check that the ribbon cable rolls up and unrolls cleanly.
- If necessary, readjust the spring stroke (Fig. 6/ 2).
- Then tighten all Allen screws of the eccentric bolts.

Attaching the covers

- Refit the image intensifier cover. Make sure the protective ground wire makes good contact.
- Refit the SIREPHOS cover.
- Refit the two rubber buffers (end stop of orbital movement) on both the SIREPHOS side and on the image intensifier side.
- Refit the lateral cover shells of the C-arm support.
- Refit the covers of the basic unit. Make sure the protective ground wires make good contact.

Checks

- Plug the SIREMOBIL into the mains and switch it on.
- Check the orbital movement in the vertical and horizontal angulation position of the C-arm.
- Check the orbital movement forces in unbraked and braked condition according to the service instructions.
- Check the collimator settings (iris diaphragm and slot diaphragms) according to the service instructions.
- If a cassette holder is present, check the cassette exposure collimation.
- If a laser targeting device is present, check the function of the laser targeting device.
- If a Diammentor is present, check the function of the Diammentor.
- Check the image quality according to the IQ quick test (see logbook).

Final work

- Perform the protective ground wire test according to ARTD-002.731.17.... The protective ground wire resistance must not exceed 0.2 ohms.

⚠ WARNING

Risk of injury due to electric shock! Non-compliance can lead to severe injuries and even death! Before opening covers disconnect the unit from the power supply. Pull the power plug out of the socket for this purpose.

Securing the basic unit against tilting

⚠ CAUTION

Risk of crushing! Risk of slight to medium physical injuries. As soon as the C-arm is relieved, the unit tilts easily to the rear. Before the C-arm is relieved, secure the basic unit against tilting to the rear.

Push a wooden block or other stable object of sufficient height centrally under the basic unit (Fig. 1/1).

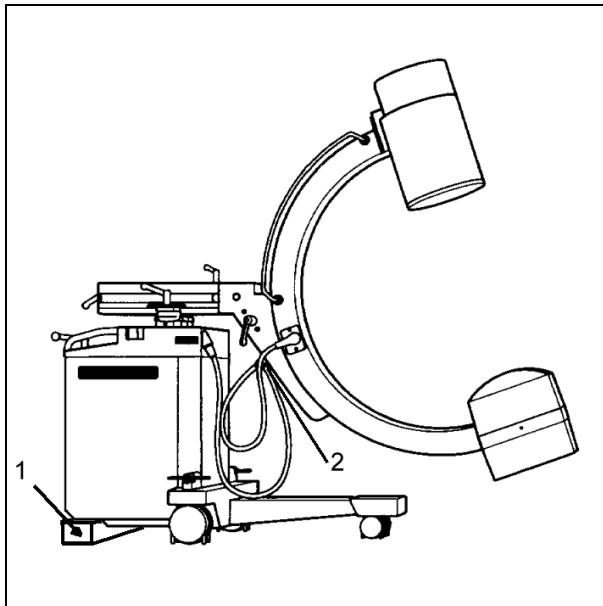


Fig. 1

Set the C-arm and lifting column to the working position

- The SIREMOBIL is plugged into the mains and switched on for a short time.
- Move the vertical lifting column into its highest position.
- Switch the SIREMOBIL off and separate it from the mains by pulling out the mains plug.
- Remove the SIREPHOS cover.
- Remove the rear cover of the basic unit.
- Remove the lateral cover shells of the C-arm support.
- Unscrew the cable holder on the C-arm support (Fig. 1/ 2).
- Place the bench in front of the SIREMOBIL C-arm.

- Turn the C-arm into the 90 degrees or -90 degrees position; the C-arm is horizontal.
- Plug the SIREMOBIL into the mains and switch it on for a short time.
- Position the C-arm over a bench with sufficient stability.
- Move the vertical lifting column so that the C-arm including image intensifier and SIREPHOS sit lightly on the bench.
- Switch the SIREMOBIL off and separate it from the mains. Pull out the mains plug.

Removing the SIREPHOS

- The angulation brake and the orbital brake of the C-arm are applied.
- Remove the end stop (rubber buffer) on the SIREPHOS side. The bolt with the mounting screws of the SIREPHOS is visible.
- Remove all connection cables from the C-arm cable to the SIREPHOS.
- Remove all connection cables to the collimator.
- If a laser targeting device is present, unsolder the cables.
- If a DIAMENTOR is present, disconnect the cable from the dose measuring chamber.
- The image intensifier and C-arm must sit on the bench.
- One person holds the SIREPHOS, the second person loosens the mounting screws of the SIREPHOS.
- Remove the SIREPHOS from the bench and set it down on a suitable base.

Removing the C-arm

- The C-arm can now be turned completely out of the C-arm support.
- Make sure that the image intensifier and C-arm always remain on the bench.
- All rollers are now accessible.

Replacing the rollers

- Replace the 4 rollers for lateral guidance. To do this, remove the locking ring, replace the rollers and refit the locking ring.
- Replace the 8 inner and 8 outer rollers. To do this, remove the locking ring and remove the old roller.

NOTE

The new version of the rollers is somewhat narrower than the older version. Use 2 shim washers in addition in each case.

- Fit a shim washer, a roller and a second shim washer on the relevant shaft.
- Refit the locking ring.
- Replace the other rollers in the same way.
- The distance between the inner and outer rollers can be adjusted. The distance of the outer roller pair can be varied for this by an eccentric.
- The eccentric is secured mechanically against turning by an Allen screw.

- Before threading the C-arm between the roller pairs, loosen the Allen screws of the eccentric bolts to increase the distance between the inner and outer rollers.
- Then thread the C-arm between the inner and outer rollers.
- Move the C-arm orbitally to and fro by approx. 30 degrees without turning the C-arm out of the support. Set the eccentrics again while doing this. The C-arm should have only a little play between the rollers. All rollers should contact the C-arm without exerting high pressure.
- Then tighten the Allen screws of the eccentrics again.

Installing the SIREPHOS

- Fasten the protective ground wire back to the SIREPHOS.
- Mount the SIREPHOS back on the C-arm using Allen screws. Take care that the cables are not crushed.
- Restore all cable connections to the SIREPHOS, collimator and possibly available laser targeting device and Diametor ionization chamber options.
- Plug the SIREMOBIL into the mains and switch it on for a short time.
- Move the vertical lifting column out completely.
- Remove the bench.
- Switch the SIREMOBIL off and separate it from the mains. Pull out the mains plug.
- Remove the wooden block.
- Fasten the cable holder of the C-arm cable back on the C-arm support.

Readjusting the eccentrics

- Loosen the 4 Allen screws of the eccentrics again.
- Set the C-arm vertical.
- Move the C-arm orbitally several times from end stop to end stop.
- While doing so, adjust the eccentrics so that all rollers contact the C-arm in all C-arm positions without exerting high pressure on the C-arm.
- If the pressure exerted on the C-arm by the rollers is too high, then the required movement force is increased.
- Turn the C-arm by 180 degrees; the C-arm is vertical again; the positions of the image intensifier and SIREPHOS are changed over.
- Move the C-arm orbitally several times from end stop to end stop.
- While doing so, adjust the eccentrics once again so that all rollers contact the C-arm in all C-arm positions without exerting high pressure on the C-arm.
- Then tighten the Allen screws of the eccentrics again.

Attaching the covers

- Refit the SIREPHOS cover.
- Refit the rubber buffer (orbital movement end stop) on the SIREPHOS side.
- Refit the lateral covers of the C-arm support.
- Refit the rear cover of the basic unit. Make sure the protective ground wire makes good contact.
- Refit any other removed covers and make sure that the protective ground wires have good contact.

Checks

- Check the orbital movement in the vertical and horizontal angulation position of the C-arm.
- Check the orbital movement forces in unbraked and braked condition according to the service instructions.
- Plug the SIREMOBIL into the mains and switch it on.
- Check the collimator settings (iris diaphragm and slot diaphragms) according to the service instructions.
- If a cassette holder is present, check the cassette exposure collimation.
- If a laser targeting device is present, check the function of the laser targeting device.
- If the optional Diamantor is present, check the function of the Diamantor.
- Check the image quality according to the IQ quick test (see logbook).

Final work

- Perform the protective ground wire test according to ARTD-002.731.17.... The protective ground wire resistance must not exceed 0.2 ohms.